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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/693,803	10/20/2000	Rene Gerrit Heideman	080743/Universiteit	8677

7590 03/18/2004  
Ronald A Sandler  
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77 West Wacker Drive  
Chicago, IL 60540

EXAMINER
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KANG, JULIANA K

ART UNIT	PAPER NUMBER
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2874

DATE MAILED: 03/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/693,803

Applicant(s)

HEIDEMAN ET AL.

Examiner

Juliana K. Kang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 1/12/04 (RCE).  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 14,15,20,24 and 26-36 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☒ Claim(s) 14,15 and 20 is/are allowed.  
6) ☒ Claim(s) 24 and 26-36 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_.  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_.

1. The request filed on January 12, 2004 for Request for Continued Examination (RCE) under 37 CFR 1.114 based on parent Application No. 09/693,803 is acceptable and a RCE has been established. An action on the RCE follows.

### ***Claim Objections***

2. Claims 24 and 26-36 are objected to because of the following informalities:

Claim 24 recites the limitation "the electrode pattern" in line 10. There is insufficient antecedent basis for this limitation in the claim.

Regarding claims 26-36, newly amended claims include terms such as, a first structure, a second structure, a first light transmitting structure, and a second light transmitting structure in claims 26, 32, 33, 34, 35, and 36. It is not clear to the Examiner what these terms are referring. Please either amend the claims to use the consistent terms as used in the specification or explain clearly what the terms are referring using the terms used in the specification and reference numbers. It appears the claims 24, 26-32 and 35-36 are allowable over the Duveneck et al reference. However, since all the claimed limitations are not clearly understood by the Examiner, these claims will be reconsidered when the applicant submits the responds to the claim objections. Appropriate corrections or explanations are required.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claim 33 is rejected under 35 U.S.C. 102(b) as being anticipated by Duveneck et al (U.S. Patent 6,395,558 B1).

Duveneck et al teach an integrated optical device comprising a first light transmitting structure (b, waveguide layer) and a second light transmitting structure (c, gratings) that can be formed by etching wherein the grating can be produced in the waveguide layer itself (see column 8 lines 7-23). When Duveneck et al's either the recognition layer or the waveguide layer is etched to produce the gratings, the etched portions would have the active material removed thus the etched portions would have "non-active material."

### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Duveneck et al (U.S. Patent 6,395,558 B1) and Hirata (U.S. Patent 6,414,976 B1).

As described above Duveneck et al disclose the claimed limitations except the first light transmitting structure that has a ridge. Hirata teaches that using a ridge structure reduces the waveguide loss (see column 17 lines 19-23). Thus, it would have

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been obvious to one with ordinary skill in the art to use a ridge type waveguide in Duveneck et al for improved coupling efficiency.

***Allowable Subject Matter***

7. Claims 14, 15, and 20 are allowed.

The following is a statement of reasons for the indication of allowable subject matter: the closest prior art of record, Duveneck et al (U.S. Patent 6,395,448 B1), does not teach or reasonably suggest the method step of forming a non-periodic or arbitrary length distribution different types of segments wherein *each* type of segments has a different refractive index profile in a plane perpendicular to the direction of light propagation as set forth in claims 14, 15 and 20.

***Conclusion***

8. Applicant's amendments/arguments filed 1/12/04, with respect to claims 14, 15, and 20 have been fully considered and are persuasive. The objection/rejection of claims 14, 15, and 20 has been withdrawn. The amended claim 24 and newly added claims 26-36 are either rejected or objected as discussed above.

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Helmfrid et al (U.S. Patent 5,854,870) and So (U.S. Patent 6,603,902 B1) both teach having electro-optical effect causing a change in refractive


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index in response to an electric field, however they do not teach a non-periodic or arbitrary length distribution different types of segments.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Juliana K. Kang whose telephone number is (571) 272-2348. The examiner can normally be reached on Mondays and Thursdays 7:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rod Bovernick can be reached on (571) 272-2344. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Juliana Kang  
March 11, 2004